

We claim

1. - A thermoplastic polyurethane comprising the following structural unit:



where:

R is an aliphatic, araliphatic, or aromatic organic radical having from 1 to 20 hydrocarbon atoms,

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R₁ is an alkyl radical or aryl radical having from 1 to 10 carbon atoms,

R₂ is -NR₃-CO-R₄ or -O-R₅-O-,

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R₃ is a section of the polymer chain of the thermoplastic polyurethane

R₄ is a section of the polymer chain of the thermoplastic polyurethane

R₅ is an alkylene radical having from 2 to 8 carbon atoms, and

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x is 1, 2 or 3.

2. A crosslinked polyurethane obtainable via reaction of a thermoplastic polyurethane according to claim 1 with water.

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3. A process for preparing thermoplastic polyurethane modified with organosilicon compounds, which comprises using, during the preparation of the thermoplastic polyurethane, at least one organosilicon compound ("silane") which has an isocyanate group.

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4. The process according to claim 3, wherein the thermoplastic polyurethane is prepared via reaction of (a) isocyanates, and also silane which has an isocyanate group, with (b) compounds reactive toward isocyanates and having a molar mass of from 500 to 10000, and (c) chain extenders having a molar mass of from 50 to 499, where the ratio of the entirety of the isocyanate groups in component (a) to the entirety of those functions present in components (b) and (c) and reactive toward isocyanates is from 0.9:1 to 1.1:1.

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5. The process according to claim 4, wherein the ratio of the entirety of the isocyanate groups in component (a) and of the isocyanate groups in the silanes

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to the entirety of the functions present in components (b) and (c) and reactive toward isocyanates is from 0.91:1 and 1.4:1.

- 5 6. A process for preparing silane-modified thermoplastic polyurethane, wherein thermoplastic polyurethane is reacted with silane which has an isocyanate group.
7. The process according to claim 3 or 6, wherein the silane used comprises at least one of the following compounds: γ -isocyanatopropyltrimethoxysilane, isocyanatomethyltrimethoxysilane, γ -isocyanatopropyltriethoxysilane, and/or isocyanatomethyltriethoxysilane.
- 10 8. The process according to claim 3, wherein the molar ratio of the isocyanates (a) to the silanes is from 1:0.01 to 1:0.5.
- 15 9. The process according to claim 6, wherein from 0.001 to 0.20 mol of silane is used for each 100 g of thermoplastic polyurethane.
- 10 10. The process according to claim 3 or 6, wherein the silane-modified thermoplastic polyurethane is spun to give fibers, or is extruded to give hoses, and then the thermoplastic polyurethane is crosslinked by way of the silane groups by means of moisture.
- 25 11. The process according to claim 10, wherein the catalyst used for the crosslinking by means of moisture comprises Lewis acids, Lewis bases, Brönsted bases, Brönsted acids.
12. A polyurethane obtainable via a process according to any of claims 3 to 11.
- 30 13. A fiber based on thermoplastic polyurethane obtainable according to any of claims 3 to 11.
14. A hose based on thermoplastic polyurethane obtainable according to any of claims 3 to 11.
- 35 15. A cable sheathing based on thermoplastic polyurethane obtainable according to any of claims 3 to 11.
- 40 16. The use of the thermoplastically processible polyurethane elastomers obtainable via a process according to any of claims 3 to 9 for extrusion products, injection-molded products, calendered products, or else for powder-slush processes.